

## CLAIMS

### WHAT IS CLAIMED IS:

1. A low density substantially linear polyethylene composition having: (a) a density of 0.935 g/cc or less; (b) a Haze of 10% or less, (c) a Dart Impact of 100 grams/mil or more, (d) an average long chain branching index of 0.95 or more; and (e) a slice long chain branching index of 0.85 or less for any portion of the composition having a molecular weight of 100,000 or above.
2. A low density substantially linear polyethylene composition having: (a) a density of 0.935 g/cc or less; (b) a Haze of 10% or less, (c) a Dart Impact of 100 grams/mil or more; and (d) an average long chain branching index of 0.95 or more; wherein: (e) a first portion of molecules has a slice long chain branching index of more than 0.90, the first portion representing 95.0 wt% or more of the composition; and (f) a second portion of molecules has a long chain branching index of 0.90 or less, the second portion representing greater than 0.2 wt% and less than 5.0 wt% of the composition.
3. A low density substantially linear polyethylene composition having: (a) a density of 0.935 g/cc or less; (b) a Haze of 10% or less, (c) a Dart Impact of 100 grams/mil or more; and (d) an average long chain branching index of 0.95 or more for the composition; wherein: (e) the composition comprises a blend of a first polyethylene component and a second polyethylene component; (f) the second polyethylene component is present in an amount of less than 10 wt%; and (g) the average long chain branching index of the second polyethylene component is less than 0.85.
4. The composition of claims 1 or 2, in which the slice long chain branching index is 0.80 or less for any portion of the composition having a molecular weight of 100,000 or above.

PATENT

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5. The composition of claims 1 or 2, in which the slice long chain branching index is 0.80 or less for any portion of the composition having a molecular weight of 150,000 or above.
6. The composition of claims 1 or 2, in which the portion of the composition having a molecular weight of 100,000 or more, with a slice long chain branching index of 0.85 or less, occupies 5 wt% or less of the composition.
7. The composition of claims 1, 2, or 3, in which the density of the composition is 0.910 g/cc to 0.935 g/cc.
8. The composition of claims 1, 2, or 3, in which the average long chain branching index of the composition is 0.96 or more.
9. The composition of claims 1, 2, or 3, in which the Haze is less than 5%.
10. The composition of claims 1, 2, or 3, in which the Dart Impact is 250 grams/mil or more.
11. The composition of claims 1, 2, or 3, having a polydispersity index (PDI) of from 2 to 7.
12. The composition of claims 1, 2, or 3, having an Elmendorf Tear (MD) of at least about 100 grams/mil.
13. The composition of claims 1, 2, or 3, having an Elmendorf Tear (TD) of at least about 100 grams/mil.
14. The composition of claims 1, 2, or 3, having a tensile strength (MD) of at least about 8500 psi.

15. The composition of claims 1, 2, or 3, having a tensile strength (TD) of at least about 5000 psi.
16. The composition of claim 2, in which the second portion of molecules represents 4.5 wt% or less of the composition.
17. The composition of claim 2, in which the second portion of molecules has a slice long chain branching index or 0.85 or less.
18. The composition of claim 3 in which the second polyethylene component is a polyethylene that occupies less than 5 wt% of the composition.
19. The composition of claim 3 in which the second polyethylene component includes a high density polyethylene having a density of 0.945 g/cc or more.
20. The composition of claim 3 in which the second polyethylene component includes a high pressure linear low density polyethylene having a density of 0.935 g/cc or less.
21. The composition of claim 3 in which the first polyethylene component includes a polyethylene with an average long chain branching index of 0.96 or more.
22. The composition of claim 3 in which the second polyethylene component includes a polyethylene with an average long chain branching index of 0.80 or less.
23. The composition of claim 3 in which the polydispersity (PDI) of the first polyethylene component is from 2 to 7.
24. The composition of claim 3 in which the polydispersity (PDI) of the second polyethylene component is from 5 to 25.